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marks upon wood engraving. Upon this, we will, at present, only observe, that a very excellent essay upon wood engraving appeared in a late number of the "London and Westminster Review"; particularly valuable by being illustrated by specimens. The American re-publishers have had the sagacity to print the essay without the illustrations, which is about as wise as representing the tragedy of Hamlet, with the part of Hamlet left out by particular request.

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ART. V. — *North American Herpetology; or a Description of the Reptiles inhabiting the United States*. By JOHN EDWARDS HOLBROOK, M. D., Professor of Anatomy in the Medical College of the State of South Carolina, Member of the Royal Medical Society of Edinburgh, &c. &c. 4to. Philadelphia: J. Dobson. Vol. I. 1836. Vol. II. 1838. pp. 120 and 125.

WHEN we learned, several years since, that Dr. Holbrook was preparing a complete work upon the Reptiles of this country, we were forcibly impressed with the magnitude of the undertaking, and the difficulties which would unavoidably accompany its prosecution. Aware, however, of his long-continued investigations and indefatigable industry, we anxiously awaited the publication of the first volume, confident that it would be creditable to its author. It more than realized our sanguine expectations. In less than two years after its appearance, a second volume has issued from the press. Invaluable as the work is to the American herpetologist, we regret to find that it has as yet attracted little attention; a circumstance, which makes it the more imperative upon us to express, in some detail, our sense of its great merit.

The first volume opens with a chapter upon the "organization of reptiles," in which the organs of digestion, absorption, circulation, and respiration, together with their physiology, the structure of the nervous system, and of the organs of sense, are treated somewhat at length; and, while the accuracy of the observations will be observed with delight by the scientific naturalist, the clear and interesting manner in which the subject is elucidated cannot but afford to the general reader

equal pleasure and improvement. The portion relating to the senses, particularly, is highly instructive.

Under the head of "Digestive Organs," our author observes, when speaking of the œsophagus,

"In some of the Chelonian animals, there are many horny points in the œsophagus, directed backwards or towards the stomach, which may be useful in preventing the escape of food."—Vol. I. p. 16.

He has probably never had opportunity to examine that curious and very rare tortoise, the *Sphargis coriacea*, or *leather tortoise*, a specimen of which, more than seven feet in length, was, in the year 1824, captured asleep upon the surface of the water in Massachusetts Bay. This is the only specimen we have ever known to have been taken on the coast of the United States. Upon dissection, its œsophagus was found to be thickly studded not merely with "horny points," but with large, very strong, *horny spines*, some of which were two inches in length.

In the observations upon the organ of *taste*, we find the following sentence,

"All reptiles have a tongue, varying, however, greatly in its shape, organization, and mode of attachment, but certainly having little claim to be considered as an organ of taste."—p. 38.

Had our author remarked, that all reptiles had organs of taste, we should not feel called upon to refer to this statement. But having recently had the good fortune to meet with a genus, the *Pipa*, one of whose characters, as pointed out by Laurenti, is, the "absence of a tongue," we are bound to point out an exception to his remarks. In the specimens of the *Pipa* (*Rana pipa*, L.) sent to the Boston Society of Natural History, the last season, from Surinam, by Dr. Craigin of that place, not the slightest rudiment of a tongue can be perceived.

The first volume of the work before us contains descriptions of twenty-three species, all accompanied with figures drawn from living specimens, one third of which were previously unknown to the naturalist. Every species is very minutely described, its geographical limits pointed out, and its habits elucidated, oftentimes with great perspicuity, awakening uncommon interest in the mind of the reader. Much labor is likewise bestowed in settling the synonyms, than

which nothing could more facilitate the studies of the herpetologist. A similar plan is pursued, throughout the volume, with regard to the arrangement of the descriptions; and, although some of course extend to a considerably greater length than others, they are all so minute and comprehensive that they could not be mistaken, even were they not illustrated by the faithful and beautiful plates.

The first animal described is the *Testudo polyphemus*; the only species of *Testudo* yet known in the United States. Having pointed out its specific characters, Dr. Holbrook thus portrays its habits.

“They select dry and sandy places, are generally found in troops, and are very abundant in pine barren countries. They are gentle in their habits, living entirely on vegetable substances; they are fond of the sweet potato, (*Convolvulus Batatas*,) and at times do much injury to gardens, by destroying melons, as well as bulbous roots, &c. &c. In the wild state they are represented as nocturnal animals, or as seeking their food by night; when domesticated, and I have kept many of them for years, they may be seen grazing at all hours of the day. When first placed in confinement, they chose the lowest part of the garden, where they could most easily burrow; this spot being once overflowed by salt water, in a high spring tide, they migrated to the upper part, nearly eighty yards distant, and prepared anew their habitations. They seldom wandered far from their holes, and generally spent part of the day in their burrows. They delighted in the sun in mild weather, but could not support the intense heat of our summer noons; at those hours they retreated to their holes, or sought shelter from the scorching rays of the sun, under the shade of broad-leaved plants; a *tanyer*, (*Arum esculentum*,) that grew near their holes, was a favorite haunt. They could not endure rain, and retreated hastily to their burrows, or to other shelter, at the coming on of a shower. As winter approached, they confined themselves to the immediate neighbourhood of their holes, and basked in the sunshine; as the cold increased, they retired to their burrows, where they became torpid; a few warm days, however, even in winter, would again restore them to life and activity.”—pp. 44, 45.

The next three species are beautiful *Emyda*, sent by Professor Troost to the author, from the western rivers, to which are given the appropriate names of *hieroglyphica*, *megacephala*, and *Troostii*. But little more than a simple

description of these species is furnished us, as their habits are comparatively unknown. The remaining *Emys* of this volume, the *Muhlenbergii*, which Say called *biguttata*, is found, our author remarks, "only in New Jersey and East Pennsylvania, and is rare even in these districts."

The next species is the *Ameiva sex-lineata*, known commonly as the *striped lizard*, and the familiar representative of the lizard in the United States, as of the true lizards we have none. Its habits are thus described.

"This is a very lively, active animal, choosing dry and sandy places for its residence, and is frequently met with in the neighbourhood of plantations, or near fences and hedges; most usually it is seen on the ground in search of insects, but it will take to trees when pursued. Its motions are remarkably quick; it runs with great speed, and climbs with facility; yet it cannot leap from branch to branch, or from tree to tree, like the *Anolius carolinensis*. The *Ameiva sex-lineata* is very timid; it feeds on insects, and generally seeks its food toward the close of the day, when they may be seen in cornfields far from their usual retreat; and not unfrequently I have met male and female in company." — p. 65.

The *Anolius Carolinensis*, another animal of the lizard kind, and usually called *Chameleon*, or *green lizard*, from its delicate green color, we have had an opportunity of seeing alive, and we cannot refrain from expressing our gratification at the faithfulness of the description, and the excellence of the figure. The following account of this species, shows the accurate observation of the author.

"The *Anolius Carolinensis* is a bold and daring animal, haunting out-houses and garden fences; and in new settlements it even enters the houses, walking over the tables and other articles of furniture, in search of flies. It is very active, climbing trees with great rapidity, and leaping with ease from branch to branch, or from tree to tree; securing itself even on the leaves, by means of the oval disks of the fingers and toes; which enable it also to walk easily on glass, and on the sides and ceilings of rooms. It feeds on insects, and destroys great numbers, seizing them suddenly, and devouring them, unrestrained even by the presence of man. In general, they hibernate later than other animals of the same class, their favorite retreats being gardens and old buildings; they often retire to green-houses, or conservatories, where they may be frequently seen active, even in winter, but never of that rich yellow green as in the

summer season. In the spring season, they are extremely quarrelsome ; two males seldom meet without a furious battle, which frequently results in the loss of part of the tail, or some other injury, to one or both of the combatants. Before the contest, the animal usually remains stationary for a moment, elevates and depresses its head several times, inflates his gular sac, which now becomes of a bright vermilion, and then suddenly springs at his enemy. After the first heats of spring have passed, they become less quarrelsome, and many are seen quietly living together in the same neighbourhood ; they retain at all times the habit of inflating the sac, even when quietly basking in the sun ; and at those times the coloring of the animal has the liquid brilliancy of the emerald." — pp. 69, 70.

Two species of *Bufo* had been supposed to be identical. One of these, our common toad, generally called the *musicus*, is here at the suggestion of Le Conte, described as the *Americanus*, on account of its extended distribution. From our author's interesting remarks respecting this species, we would extract only a single observation.

"It has been commonly supposed that the humor exuding from the skin and glands is poisonous ; yet no experiments have proved it so, and certainly no injury has ever arisen from handling or examining the animal." — p. 77.

In the account of the *Bufo lentiginosus*, the southern species, from which the preceding is separated, we find the following amusing anecdote of its instinct.

"I have seen an individual, kept for a long space of time, which became perfectly tame. During the summer months it would retire to a corner of the room, into a habitation it had prepared for itself, in a small quantity of earth, placed there for its convenience. Towards evening it would wander about the room in search of food, seizing greedily whatever insect came in his way. Some water having been squeezed from a sponge upon his head, one hot day in July, he returned the next to the same spot, and seemed very well pleased with the repetition ; nor did he fail, during the extreme heat of the summer, to repair to it frequently, in search of his shower-bath." — p. 81.

A singular little *Engystoma*, a kind of animal very similar to a toad, is here for the first time described, to which the specific name, *Carolinense*, is given. It is the only species of the genus which has been met with in the United States, and has not as yet been discovered north of Charleston.

A new and very curious genus is next presented us, which

our author calls *Scaphiopus*. It possesses the following characters, showing it to be a sort of connecting link between the toad and frog.

“Body short, thick, swollen ; head short ; minute teeth in the upper jaw and on the palate ; a small, glandular wart behind the ear, from which a watery fluid can be pressed ; posterior extremities short, stout, and muscular ; leg shorter than the thigh ; a spade-like horny process occupies the position of a sixth toe, and is used by the animal in excavating.” — p. 85.

The peculiarities of its organization, are at once explained by the habits of the only known species, the *solitarius*.

“This is a strange animal, — an odd mixture of toad and frog, having the teeth of the one and the rudimental post-tympanal glands of the other ; it approaches, however, nearest the toad in its form and habits, as it never ventures in water except at the breeding season ; it lives in small holes about six inches deep, excavated by itself in the earth, which for a long time I took for holes of insects ; here it resides like the ant-lion, seizing upon such unwary insects as may enter its dwelling. It never leaves its hole, except in the evening or after long-continued rains. It shows great dexterity in making this dwelling ; sometimes using the *nates*, and fastening itself by the spade-like process ; at others it uses the legs with these processes, like a shovel, and will in this way conceal itself with great rapidity. In progression its motions are not very lively, and its powers of leaping but feebly developed. It appears early in March, after the first heavy rains of spring, and at once seeks its mate.” — p. 87.

The descriptions of the frogs, *halecina*, *palustris*, and *sylvatica*, our common species, are all that the student could desire. Without the excellent plates, the author would have been perfectly intelligible.

A striking instance of the limited distribution of some reptiles is shown in the *Rana ornata*, a pretty species of frog, made known to naturalists by our author, who observes ;

“This animal has hitherto been found only in South Carolina, and as yet only in one locality, about four miles from Charleston, between the Cooper and Ashley rivers, where it abounds.” — p. 98.

Our common and beautiful *tree toad*, the *Hyla versicolor*, is here, for the first time, figured. The plate is well done, and the observations relating to its habits are very accurate.

When speaking of the *Hyla squirella*, our author remarks,

that it has not been found further north than the thirty-fourth degree of latitude, and therefore that must be considered its most northern limit. During the last season we received one from Roxbury, within three miles of Boston. So that it will probably be found to extend as far north as the preceding species.

Descriptions of five beautifully delineated species of *Coluber* terminate the first volume.

The *coach-whip snake*, *flagelliformis*, of which we have a fine figure, is so rare, even in those Southern states in which it is found, that our author says, "During a seven years' search I have never seen but one living specimen."

A beautiful new species, five feet three inches in length, from the Alleghany mountains, is called *Alleghaniensis*. And another, four feet five inches in length, receives the name of *abacurus*.

The plates are extremely well executed, preserving so well the appearance of nature, that no one would suspect for a moment, that they were drawn from preserved or distorted specimens. The attitudes, in many instances, of the species are strikingly faithful. Of those which have fallen under our notice alive, we can speak more decidedly, and would therefore point to the figures of the *Anolius Carolinensis*, *Bufo Americanus*, *Rana halecina*, *palustris* and *sylvatica*, *Hyla versicolor* and *squirella*, as being exceedingly correct.

The second volume of the work contains descriptions and figures of twenty-eight species, four of which are new to science. Nearly one half of the volume is composed of descriptions of nine species of *Emyda*, *fresh water tortoises*. No little confusion had previously existed among several of these species. One of our first herpetologists has said, he could not distinguish the specific characters of five of them. Our author has settled their distinctions with the utmost clearness; and his descriptions of the *serrata*, *reticulata*, *rubri-ventris*, and *Floridana* are illustrated with plates which require neither the eye of the naturalist to distinguish, nor of the artist to admire. To a fine large species, fifteen inches in length, common around Mobile, but previously undescribed, our author gives the name of *Mobilensis*. Three species of *Salamander* are presented us; two of which, the *dorsalis* and *symmetrica*, are common in New England.

If, in the pages we have passed over, no errors have been



referred to, it is because none have been perceived of sufficient importance to demand notice. We should have been better pleased, it is true, to have seen, instead of the bronzed *carapace* (upper shell) of the *Emys guttata* (our common and beautiful speckled tortoise), its natural color. But our author, in his description of this species, says, "the whole upper surface of this animal, the head as well as the extremities, is black," &c. &c., showing conclusively his own accuracy, and that the fault is that of the artist. But the same motive, which has excited us thus freely to speak of the beauties and value of the work before us, prompts us to point out what appears inaccurate. In the description of the *Salamander dorsalis*, the color is thus spoken of.

"The whole superior surface of the *Salamander dorsalis*, neck, head, and body, as well as the tail and extremities, is of an olive color, with a strong tinge of green, &c."—Vol. II. p. 58.

And the coloring of the plate corresponds with the description. The *dorsalis*, as seen in Massachusetts, has its whole upper as well as its under surface sprinkled with innumerable black dots. A defect appears in the lower figure of the plate, owing to the right anterior extremity being placed further back on the body than the left. The figures of the *symmetrica* also are unnatural, on account of the disproportion between the anterior and posterior extremities. The remaining salamander is a new and singularly marked species, which is appropriately called *gutto-lineata*.

The habits of the dreaded *Trionocephalus piscivorus*, the *water moccasin*, are thus illustrated.

"It is found about damp, swampy places, or in water, — far from which it is never observed. In summer, numbers of these serpents are seen resting on the low branches of such trees as overhang the water, into which they plunge on the slightest alarm. Catesby thinks they select these places to watch for their prey. They merely choose them in order to bask in the sun ; for in situations deprived of trees, as the ditches of rice-fields, their lurking-places are often on dry banks. They are the terror of the negroes that labor about rice plantations, where they are more dreaded than the rattlesnake, which only bites when irritated or in self-defence, or to secure its prey ; the water moccasin, on the contrary, attacks every thing that comes within its reach, erecting its head and opening its mouth for some seconds before it strikes. I have placed in a cage with the water moccasin several of the harmless snakes, as

the *Coluber guttatus*, *Coluber getulus*, &c., at a time ; they all evinced the greatest distress, hanging to the sides of the cage, and endeavouring by every means to escape from their enemy, who attacked them all in turn. Two animals of its own species were then thrown into the cage ; it seemed instantly aware of the character of its visitors, and became perfectly quiet. Indeed, I have often received four or five of these animals in safety, after their having peaceably travelled together a journey of fifty miles in the same box." — p. 65.

Three species of *Crotalus* (*rattlesnake*), are described, the plates accompanying which are very good. Upon the *miliarius*, we find the following remarks ;

"The *Crotalus miliarius* is greatly dreaded, as it gives but a very slight warning with its rattle ; and, unlike the *Crotalus durissus*, will frequently be the aggressor. By the common people its bite is thought to be more destructive, and its venom more active, than that of the larger species ; various experiments have, however, satisfied me of the fallacy of this opinion. It is probable, that each *Crotalus* has the requisite quantity of venom to destroy the animals on which it preys, for it is certain that the *miliarius* can easily kill a small bird, such as the towhee bunting, a pigeon, or a field-mouse ; but a cat that was bitten several times, at different intervals, appeared to suffer much, and to droop for thirty-six hours, at the end of which time the effects of the poison entirely disappeared ; the same animal was long afterwards destroyed by a single blow of the *Crotalus durissus*." — p. 76.

The *adamanteus* is thus graphically depicted.

"The *Crotalus adamanteus* is the largest of our rattlesnakes, reaching even to the length of eight feet. The individual from which the accompanying plate was taken, had reached the length of nearly six feet, and I have seen others over seven feet long ; a more disgusting and terrific animal cannot be imagined than this ; its dusky color, bloated body, and sinister eyes, of sparkling grey and yellow, with the projecting orbital plates, combine to form an expression of sullen ferocity unsurpassed in the brute creation." — p. 79.

The plate of the next species, the *durissus*, the *common rattlesnake* of New England, is admirable. The author's remarks upon the habits of this species are valuable, as correcting current errors upon the subject.

"The *Crotalus durissus* lives on rabbits, squirrels, rats, &c. ; and in general is a remarkably slow and sluggish animal, lying quietly in wait for his prey, and never wantonly attacking or

destroying animals, except as food, unless disturbed by them. A single touch, however, will effect this; even rustling the leaves in his neighbourhood is sufficient to irritate him. On these occasions he immediately coils himself, shakes his rattles violently in sign of rage, and strikes at whatever is placed within his reach. In his native woods, one may pass within a few feet of him unmolested; though aware of the passenger's presence, he either lies quiet or glides away to a more retired spot, unlike some of the innocent snakes, that I have known attack passers-by, at certain seasons of the year. He never follows the object of his rage, whether an animal that has unwarily approached so near as to touch him, or only a stick thrust at him to provoke his anger, but strikes on the spot, and prepares to repeat the blow; or he may slowly retreat, like an unconquered enemy, sure of his strength, but not choosing further combat. It is remarkable, that he never strikes unless coiled; so that, if once thrown from this position, he may be approached with less danger.

"As to the fascinating or charming power of the rattlesnake, I have every reason to believe it a fable; and the wonderful effects, related by credible witnesses, are attributable rather to terror than to any mysterious influence not possessed by all venomous or ferocious animals upon their weak, timid, and defenceless prey. The rattlesnake's charm lies in the horror of his appearance, and the instinctive sense of danger that seizes a feeble animal, fallen suddenly into the presence of an enemy of such a threatening aspect." — p. 83.

That the age of the rattlesnake cannot be ascertained from the number of its rattles, is evident from the following observations.

"It is commonly supposed that the number of rattles marks the age of the animal, a new one being added annually to those already existing. It is now certain, that rattlesnakes have been known to gain more than one rattle in a year, and to lose in proportion, the exact number being regulated no doubt by the state of the animal as to health, nourishment, liberty, &c. I have known two rattles added in one year, and Dr. Bachman has observed four produced in the same length of time. Mr. Peale, of the Philadelphia Museum, kept a living female rattlesnake for fourteen years. It had when it came into his possession eleven rattles, several were lost annually and new ones took their place; at its death, after fourteen years' confinement, there were still but eleven joints, although it had increased four inches in length. It is thus evident, that the growth of their appendages is irregular, and that the age of the animal cannot be determined from their number. The number of

rattles varies much ; the largest I ever saw was twenty-one, all of which were perfect." — p. 85.

To such as involuntarily shudder at the mere mention of a snake, a single remark of our author cannot be useless, as showing the folly of cherishing such aversions ; speaking of the *Coluber æstivus*, he says,

" This beautiful snake is perfectly harmless and gentle, easily domesticated, and takes readily its food from the hand. I have seen it carried in the pocket, or twisted round the arm or neck as a plaything, without once evincing any disposition to mischief." — p. 120.

Besides the species we have thus cursorily referred to, the *Elaps fulvius*, *Heterodon platirhinos*, *Scincus erythrocephalus*, *Heterodon niger*, *Coluber fasciatus*, *guttatus*, *punctatus*, and *æstivus*, as well as two new species, the *Coluber taxipilotus* and *elapsoïdes*, are included in this volume. We repeat, that the work is a real acquisition to the natural history of the country. The minute accuracy of detail in description, exhibited on every page, together with the constant endeavour to ascertain the geographical limits of the species, and to collect all attainable facts with regard to their habits, will establish the scientific reputation of our author upon an enviable basis. We look with eagerness for the appearance of the succeeding volumes.

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- ART. VI. — 1. *Memoirs of Aaron Burr, with Miscellaneous Selections from his Correspondence*. By MATTHEW L. DAVIS. New York : Harper & Brothers. 2 vols. 8vo.  
2. *The Private Journal of AARON BURR, during his Residence of Four Years in Europe, with Selections from his Correspondence*. Edited by MATTHEW L. DAVIS. New York : Harper & Brothers. 2 vols. 8vo.

WE know of no reason why a biography should necessarily be a eulogy, though in most cases it is made so. Neither are we certain, that the history of a bad man, judiciously written, would not be more useful to the world, than that of a good one indiscriminately praised. The "Newgate Calendar" is an interesting book, notwithstanding its very coarse delineation of character, and its general substitution of wretched